ACC.14
TCT@ACC-i2 | innovation in intervention

A598
JACC April 1, 2014
Volume 63, Issue 12

Congenital Heart Disease

NOVEL APPLICATION OF VIRTUAL 3D MODELS DERIVED FROM CARDIAC CT AND MRI TO ASSESS CANDIDACY FOR TWO VENTRICLE REPAIR IN PATIENTS WITH COMPLEX CONOTRUNCAL DEFECTS

Poster Contributions
Hall C
Monday, March 31, 2014, 9:45 a.m.-10:30 a.m.

Session Title: Advanced Imaging and Practice Patterns in Pediatric and Congenital Heart Disease
Abstract Category: 10. Congenital Heart Disease: Pediatric
Presentation Number: 1266-266

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Background: Complex ventriculo-arterial relationships in patients with conotruncal defects often render it difficult to plan baffling of one outflow tract without resulting in obstruction of the other. We hypothesized that constructing a 3D virtual model would allow more informed preoperative planning.

Methods: Virtual 3D models were generated from either cardiac CT or MRI using Mimics, 3- Matic and Meshlab software. Patients were chosen for their complexity of intracardiac anatomy and need for better delineation of potential baffle pathways with avoidance of outflow tract obstruction.

Results: Three models, from CT and MRI's, were generated from patients with complex double outlet right ventricle (DORV) anatomy. The path from each ventricle to a respective outflow tract was visualized clearly in all patients, as were structures such as conal septum, which may contribute to outflow tract obstruction. Atrioventricular (AV) valve attachments were not well delineated. A sample coronal intracardiac view of a patient with DORV {S,L,A} subpulmonary ventricular septal defect in dextrocardia is shown in Figure1.

Conclusion: Construction of virtual 3D models in patients with complex conotruncal defects allows for more precise preoperative planning. Correlation with echocardiography is needed to delineate AV valve attachments.